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ABSTRACT

A microcomputer and hard disk were used to set up an automated card catalog in an Edmonton (Alberta) elementary school learning resource center to determine if a computerized card catalog would help elementary students to access learning resource materials, thereby enhancing their learning. Instead of using a traditional card catalog, students from grades 1 to 6 typed on the microcomputer the author, title, or subject desired. The computer replied with a list of available center materials as well as their locations. Evaluation included pre- and posttests on computer literacy with a sample of second and fifth grade students, interviews with the teacher/librarian and library aide, teacher and student questionnaires, and records of circulation data, librarian activities, how the librarian and aide spent their time before and after implementation of the project, and capital and maintenance costs. Results showed greater student interest and use of the library, a dramatic increase in the use of the automated card catalog over the traditional type, and more use of non-fiction materials by students in grades 1 to 3. Students were able to access material more easily, and the computerized catalog was less difficult for them to use than the traditional one. An appendix includes data gathering instruments. (Author/LMM).

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Utilization of a Microcomputer in an Elementary School Learning Resource Centre

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UTILIZATION OF A MICROCOMPUTER

IN AN

ELEMENTARY SCHOOL LEARNING RESOURCE CENTRE

Meyonohk Elementary School
Edmonton Public Schools
Under Contract to Alberta Education
Edmonton, Alberta
July, 1983

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Utilization of a Microcomputer in an Elementary School Learning Resource Centre

Abstract of the Project

A microcomputer and hard disk were used to set up an automated card catalogue in Meyonohk Elementary School Learning Resource Centre. Instead of thumbing through cards in the traditional card catalogue, students from grades 1 to 6 would type on the microcomputer the author, title, or subject desired. The computer would reply with a list of those materials available in the Learning Resource Centre, as well as their locations.

The purpose of the project was to determine if a computerized card catalogue would help students access learning resource materials, thereby enhancing their learning. The project resulted in:

(1) greater student interest and use of the library;

(2) a dramatic increase in use of the automated card catalogue over the traditional type; and

(3) more use of non-fiction materials by Division I (Grades 1, 2, and 3) students.

The major result of the project was that students were able to access material more easily; the computerized card catalogue was less difficult for them to use than the traditional one.

Project Director: Mr. Thor Lerohl

Project Location: Meyonohk Elementary School, Edmonton Public Schools

Duration of Project: September, 1982 to August, 1983

Specific Project Problem Area

The increase in the use of learning resource materials in elementary schools is creating a need for more efficient methods of accessing and circulating these materials within schools. A new, large elementary school provided the opportunity to apply microcomputer technology to the problem of efficiently handling resource materials.

The purpose of this project was to enhance student learning through an increase of computer literacy among elementary students. The major components of the project were:

(a) Orienting students to the accessing of learning resource materials with the microcomputer. Students used a practical application of microcomputer technology.

(b) Implementing the microcomputer system in the school and evaluating its effects on:

1. the computer literacy of students;
2. the library usage by students and staffs;
3. the ease with which materials are located by students and staff;
4. the amount of time spent in keeping catalogue records;
5. the role of the teacher-librarian.

Objectives of the Project

The project objectives were as follows:

a. Terminal Objectives

1. To increase computer literacy among students.
2. To enhance student learning through more effective use of learning resources (i.e. accessing materials through a microcomputer).

b. Enabling Objectives

1. To teach students how to use a microcomputer for accessing learning resource materials.
2. To stimulate greater interest in learning resource materials among students.
3. To increase the availability to students of learning resource materials through microcomputer cataloguing.
4. To maximize the availability of the microcomputer to students.
5. To determine if an automated library system could contribute to a more positive school climate.
6. To determine the effects of implementing a microcomputer system for accessing learning resource materials by investigating:
   - the cost effectiveness of a microcomputer system in an elementary school library;
   - the durability of microcomputer hardware in a school setting with maximum usage;
   - the minimum age at which students can become familiar with and use the microcomputer;
   - the effect that the use of an automated system has on the role of the librarian.

Design of the Project

A. Methods and Procedures

1. Hardware and software were purchased. This included:

   2 48K Microcomputers with 16K RAM cards

   1 Corvus hard disk

   2 Printers

   2 Monitors

4 disk drives

3 pkgs. data diskettes

1 Multi-user Computer Cat program

1 Omninet disk server

2 Omninet disk transporters

2. The library's collection was taken from the shelf list for the card catalogue and typed into the computer.
3. The computer "Cat" program was set up and "bugs" worked out.
4. Students and teachers were taught how to use the microcomputer for accessing information.
5. A detailed evaluation plan was developed. Where appropriate, pre and post tests, questionnaires, and interviews were administered and conducted.

B. Personnel Involved in Project

27 professional staff

7 support staff

585 students ECS - 6

C. Evaluation Procedures Used

1. Pre and post tests on computer literacy were administered to sample groups of students at the grades 2 and 5 level in November, 1982 and May 1983.
2. The teacher/librarian and library aide were interviewed for their impressions of the project.
3. Teachers completed a questionnaire to determine their impressions of the project.
4. A sampling of students at grades 1, 3, 4 and 6 answered a questionnaire to determine their impressions of the project.

5. Teacher/librarian and library aide indicated how their time was spent before and after the implementation of the project.
6. An ongoing record was kept of circulation data, librarian activities and capital and maintenance costs.

(Copies of the instruments used are included in the Appendices.)

Results of the Project

1. Ease with which information can be located--Teachers, students, and library personnel agreed that the computer made it easier for them to find materials. Difficulty with alphabetical order no longer precluded some students from using the card catalogue. Further, Division I students (who are normally unable to use a traditional card catalogue) were able to use the computer, and were found to use the non-fiction section much more than previously. However, when only one microcomputer was available at the beginning of the project, lineups occurred. Also students expressed frustration with the computer keyboard. They felt it would be better in alphabetical order.
2. The effect of the computer on students' motivation to use learning resource materials and its effect on library usage--The computer was very popular. It was used much more than the traditional card catalogue had been. Most students felt they used the library more this year than last. Both the teacher/librarian and the library aide felt that more students were using the library. Circulation statistics remained about the same.
3. The effectiveness of the orientation programs for students and staff--Teachers and students expressed satisfaction with the orientation programs. Students had little difficulty using the computer.

4. The effect on the instructional program--The school's instructional program remained unchanged. The teacher/librarian's instructional program changed. After the initial orientation more time was spent giving individual assistance to students than class teaching. The teacher/librarian found the microcomputer easier to teach than the traditional card catalogue.
5. The effect on school climate--Students and staff seemed proud of the library project. Several students felt the school was more advanced than other schools because of it. Many visitors were received at the school, resulting in a higher profile for Meyonohk in the educational community.
6. The ease with which records can be maintained--Because it is faster to enter records into the computer than to file cards, the turnaround time (the time between new books arriving and going on shelves) was less. Preparing bibliographies was also much easier as the microcomputer will produce a print-out.
7. The durability of the hardware--No problems have yet been encountered. The Corvus hard disk drive must be stored in a safe place, and away from students, where it cannot be disturbed or moved.
8. The minimum age of which students can learn to use the computer--Students from grades 1 to 6 were taught to use the machine. Students must be able to read and spell, but need not be able to alphabetize to use the microcomputer. Grade 1 children had difficulty, but Grade 2 children were able to use the machine to the limit of their reading ability.
9. The effect of the microcomputer on the amount of time library staff have for interaction directly with students and staff--Teacher/librarian time

is spent in much the same manner as previously. However, the nature of helping children with book selection has changed. Now, more time is spent assisting students find materials after they have written down the information from the microcomputer. The library aide spends less time answering students' questions about the card catalogue.

10. The relative advantages and disadvantages of the automated card catalogue over the traditional card catalogue are as follows:

(a) students are more motivated to use the computer than the traditional card catalogue;

(b) students need not know alphabetical order to use the automated card catalogue. For this reason, younger students and less able students can use the automated card catalogue;

(c) because of the use and speed with which they can be entered, many paperbacks are included in the automated card catalogue. This increases access to them;

(d) it is easier to teach subject, author and title concepts using the microcomputer than it is to teach the traditional card catalogue;

(e) because of the ease of editing records, additional subject headings and notes can be added. This increases access points to the collection;

(f) maintaining, adding, and deleting records is easier than it is with the traditional card catalogue; and

(g) the librarian and teachers can very quickly find the resources available on any topic or by any author.

The disadvantages of the automated card catalogue over the traditional card catalogue are as follows:

(a) lineups occur at the computer (but to no greater degree at the Division II (grades 4, 5, and 6) level than when 30 students were searching the same subject in the card catalogue);

(b) students are forced to become very "picky" about commas in the right place so computer will not reject their entry; and

(c) the keyboard presents difficulty for many students. They are unfamiliar with a standard keyboard and find it slow singling out the letters they want.

11. The computer literacy of the students--While the computer literacy pre and post tests did not show great improvement in students computer literacy, most teachers felt the project made their students more aware of computers and their uses.

Significance of the Project

Computers are definitely in our students' future. Our project allowed a large number of children to have hands-on experience at a computer. Students have become aware that the computer is a tool which can help them (in this case to locate materials).

The automated card catalogue increases the potential of a small library collection, for it is easier to create many more access points to the same book.

Because of the knowledge explosion, computers will be used more and more to access information. Our students will have learned early how to use a computer to locate information.

Difficulties Encountered in Conducting the Project

The software was purchased in the United States and no technician or service personnel were available to set it up and get it going. Several "bugs" were encountered in the program, due to lack of correspondence between the software and hardware purchased. Manuals were long and confusing. For these reasons the teacher/librarian spent hours working through manuals to get the program working. After several long distance calls, a resource person was brought to Edmonton to "debug" the program.

It would be highly recommended to anyone purchasing a similar program to insist on set-up and inservice for school personnel. Also, the library personnel should be freed from their duties for a good block of time in order to familiarize themselves with the program and the workings of the machine.

Observations and Conclusions

(1) One computer is not sufficient for a school the size of Meyonohk. Another computer and multi-user program have already been purchased and set up.

(2) The vertical file materials will be entered on the microcomputers.

(3) A circulation component will be added if software and funds are available.

Recommendations or Implications

The highly successful results of the project indicate that a computerized learning resource information system would be beneficial for all schools in the District. The automated card catalogue increases the potential of a small library collection and is a useful and simple method by which to access information.

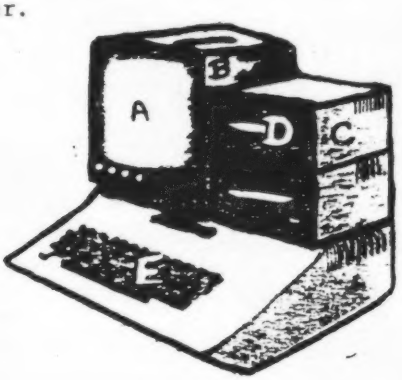
APPENDIX

Pre and Post Tests Administered to Grades 2 and 5

COMPUTER LITERACY TEST

Draw a line from the letter to the name of the part.

1. Label parts of computer.



Atari
Disk Drive
Floppy Disk
Intellivision
Keyboard
Monitor
Screen

Circle the best answer.

2. Computer hardware is:

   a. the program
   b. the machine
   c. the computer store
   d. the person who runs the machines

3. Computer software is:

   a. the program
   b. the machine
   c. the computer store
   d. the person who runs the machines

Circle T if true, F if false.

T F 4. A computer can only do what it has been programmed to do.

T F 5. A computer can store information.

T F 6. A computer can feel happy.

T F 7. A Computer is used to control the direction of space shuttles.

T F 8. A computer can control the weather.

T F 9. A computer can control me.

T F 10. A computer can multiply large numbers faster than the smartest person.

T F 11. A computer can take the place of a card catalogue.

T F 12. A computer is harder to use than the card catalogue.

T F 13. A floppy disk can store more information than a hard disk.

T F 14. Computers are cheaper today than ten years ago.

T F 15. Computers are larger today than ten years ago.

T F 16. A chip this size □ can store the names and addresses of all the students in this school.

T F 17. A chip this size □ can store the stories of all the books in my school learning resource centre (library).

Circle the best answer.

18. I have used a computer:

not at all several times often

19. I know how to use a computer:

not at all a little very well

20. When I use a computer, I feel:

happy nervous sad

Questionnaire Administered to Students in Gr. 1, 3, 4, and 6

Please circle your choice of answer.

1. Do you like the computer in the library to help you find books? YES NO NOT SURE

2. Does the computer make it easier for you to find the books you want? YES NO NOT SURE

3. Do you think it is easy to use the computer? YES NO NOT SURE

4. Do you feel that you use the library more than you did last year? YES NO NOT SURE

5. What don't you like about the way the computer works? Does it ever make you frustrated?

6. If you could change the way the computer works, what would you change?

7. Do you feel that the computer has made any difference in the way you feel about our library and our school?

Teacher/Librarian Interview

(1) Same as teacher interview with reference to all students rather than a particular class.

(2) What difficulties did you encounter in conducting the project?

(3) What modifications would you recommend for next year?

(4) Do you feel your job is made easier by having the automated system?

  (a) for instruction of students

  (b) for administrative tasks in the library?

(5) Do you feel the hardware is durable enough to withstand its use?

(6) How has your role changed (if it indeed has changed)?

(7) How effective were your orientation programs for students, staff, administrators and parents?

Library Aide Interview

(1) What difficulties did you encounter in conducting the project?

(2) What modifications would you recommend for next year?

(3) Do you feel administrative tasks in the library are made easier by having the automated system?

(4) Do you feel the hardware is durable enough to withstand its use?

(5) How has your role changed (if it indeed has changed)?

LIBRARY AIDE TIME

	BEFORE	AFTER
Overdue books	10%	30%
Processing new materials	20%	20%
Filing into computer	-	12%
Assisting library and AV clubs	15%	10%
Shelving & carding books	20%	5%
Typing orders & searching catalogs	10%	5%
Assisting students find books & materials	10%	5%
Assisting parents w/library jobs	10%	5%
Computer	-	5%
Repairs	3%	3%
Filing	2%	-

TEACHER/LIBRARIAN TIME

	BEFORE	AFTER
Assisting teachers by planning & selecting materials for units of study	30%	30%
Teaching: Instruction in library skills	20%	20%
Promotion by book talks, author, illustrator	10%	10%
Storytelling	10%	10%
Units of study with teachers	5%	5%
*Assisting individual students	10%	10%
Ordering & directing expenditures	6%	6%
Initiating & maintaining themes & contests to promote use of library	5%	5%
Organizing & managing library operations (supervising circulation, weeding, inventory, AV & Library Clubs)	4%	4%

*The nature of student assistance has changed. Previously, students required assistance in using the card catalogue to provide them with call numbers. Now, students are able to find call numbers independently on the computer and will attempt to locate the material on their own. The librarian's assistance is therefore different in nature than before the implementation of the project.

Teacher Questionnaire - Library Research Project

Please circle your choice of answer:

1. Do you feel the project has made your students more "computer literate", that is, more aware of the uses of computers?

   YES NO NOT SURE

2. Do you feel your students use the library more:

   (a) in class time? YES NO NOT SURE
   (b) in their free time? YES NO NOT SURE

3. Do you feel your students use the computer more than they did the card catalogue?

   YES NO NOT SURE

4. Does the computer make it easier for your students to find materials?

   YES NO NOT SURE

   What about you? Are you able to find material easily?

   YES NO NOT SURE

5. Do you feel your students are more interested in the library & library materials than they were last year?

   YES NO ABOUT THE SAME

6. Were the orientation programs on using the computer effective:

   (a) for your students? YES NO
   (b) for you? YES NO

7. Has the automated library system had any effect on school climate? If so, what?

8. Has the automated system changed the role of the librarian as it relates to you and your students? If so, how?

9. What difficulties did you see with the project?

10. What positive results did you see?

11. What negative results did you see?

12. Would you recommend any modifications? If you could change something about the way the program works, what would it be?